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## Cantrell's Syndrome Forme Fruste in a Newborn Diagnosed by Transthoracic Echocardiography and Cardiac Magnetic Resonance Imaging

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A newborn was referred to our hospital because of prominent cardiac pulsations in the subxyphoid region associated with supraumbilical midline cutaneous lesions (Fig. 1). Echocardiography revealed mesocardia with a ventricular septal defect, a secundum atrial septal defect, and an unroofed coronary sinus. The morphological correlate for the pulsatile tumor was a left ventricular diverticulum diagnosed by transthoracic echocardiography (Fig. 2). Cardiac magnetic resonance imaging (MRI) confirmed the presence of a left ventricular diverticulum originating from the apex of the heart and ruled out the presence of a diaphragmatic hernia (Fig. 3).

Cardiac surgical repair, performed at 4 weeks of age, confirmed the preoperative findings (Fig. 4). The left ventricular diverticulum was a continuation of the apex of the left ventricle and was totally covered by pericardium. We found a midline muscular defect of the abdominal wall and a missing linea alba, as well as a

missing xyphoid, but no evidence of diaphragmatic hernia or additional midline malformations.

This represents a forme fruste of Cantrell's Syndrome. Cantrell's pentalogy includes a midline, supraumbilical abdominal wall defect, a defect of the lower sternum, a deficiency of the anterior diaphragm, a defect in the diaphragmatic pericardium, and congenital intracardiac defects [1]. In this case, the definition of the topographic localization of the diverticulum performed by MRI and of its relation to the diaphragm was essential in planning the surgical repair.

### References

1. Cantrell JR, Haller JA, Ravitch MM (1958) A syndrome of congenital heart defects involving the abdominal wall, sternum, diaphragm, pericardium and heart. *Surg Gynecol Obstet* 107:602–614

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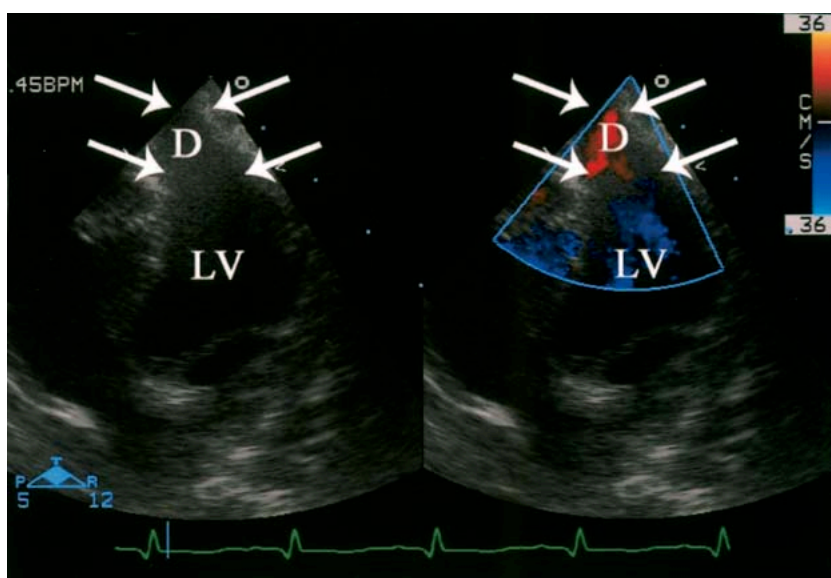
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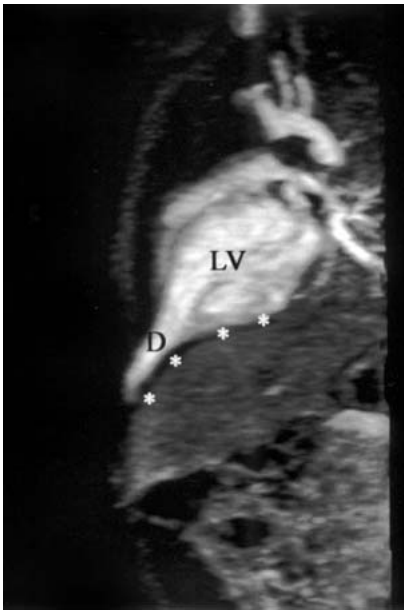
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**Fig. 1** Preoperative status showing the subxyphoid-to-supraumbilical covered midline defect of the abdominal wall



**Fig. 2 (Left)** Two-dimensional echocardiogram of the left ventricular diverticulum (*D*, arrows) and small left ventricle (*LV*). **(Right)** Color Doppler showing blood flow (*red*) into the diverticulum (*D*)





**Fig. 3** Contrast-enhanced MR angiography demonstrating the left ventricular diverticulum (*D*) with “vermiform” structure originating from the apex of the left ventricle (*LV*) and its relationship to the diaphragm (*asterisks*) (lateral projection)

**Fig. 4** Intraoperative situs of the left ventricular diverticulum (*D*). *LV*, left ventricle, *RV*, right ventricle

